

**REMARKS/ARGUMENTS**

Claims 1 - 50 and 53 are currently pending in this application. Claims 7, 11 - 15, 26, 27, 32, 33, 35, 37, 38, 44 - 48 and 52 have been withdrawn from consideration pending the allowance of a generic claim. Claims 1, 2, 8, 10, 20, 34, 36, 40, 42, 51, and 53 have been amended to more distinctly claim subject matter which the Applicant regards as the invention. Claims 51 and 52 have been cancelled. Applicant submits that no new matter has been introduced into the application by these amendments.

**Objections to the Drawings**

The Examiner objected to the drawings for allegedly not showing every feature of the invention specified in the claims. The Action stated:

Therefore, the spokes of each spoke group, when viewed in the direction of the wheel's axis, have an arrangement that is specular (mirror image) with respect to a radial plane of symmetry, as set forth in claim 41; and the spokes connecting the first and second portions of the hub to the rim having identical angular positions, as set forth in claim 51, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

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The cancellation of claim 51 renders the objection moot regarding that claim. With regards to claim 41, Applicant respectfully disagrees. In the specification at paragraph [0013] it is clearly stated that Figure 2 illustrates a first embodiment of the wheel according to the invention, viewed in the direction of the axis of the wheel. Figure 2 clearly shows an arrangement that is specular (mirror image) with respect to a radial plane of symmetry. The withdrawal of the objection to the drawings is respectfully requested.

#### **Claim Objections**

The Examiner objected to claims 1, 20, 34, and 36 for formalities. The amendments to those claims obviates the objection. The withdrawal of the objection to claims 1, 20, 34 and 36 is respectfully requested.

#### **Claim Rejections - 35 USC §112**

Claims 1 - 6, 8 - 10, 16 - 25, 28 - 31, 34, 36, 40, 42, 51, and 53 were rejected under 37 C.F.R. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter that the applicant regards as the invention. Claims 1, 2, 8, 10, 20, 34, 36, 40, 42, 51, and 53 have been amended to more distinctly claim subject matter which the Applicant regards as the

invention. Reconsideration and withdrawal of the § 112 rejection is respectfully requested.

**Claim Rejections - 35 USC §102**

Claims 1-2, 8-10, 16-20, 22-23, 25, 28-30, 39-40, 42, and 53 were rejected in the Action as being anticipated by U.S. Patent No. 1,474,631 to House, Jr. The Action states:

As best understood, House, Jr. shows a spokes wheel having a rim 11, and a hub 10 defining an axis, and having first and second anchoring portions for anchoring a plurality of spokes (13-15). The spokes (13-15) connect the rim 11 to the hub 10, and include a first set of spokes 14 connected to the first anchoring portion of the hub 10 and a second set of spokes 15 connected to the second anchoring portion of the hub 10. At least two spokes of the first set 14 are grouped together to form a pair of spokes 14. No spoke of the second set 15 is interposed.

The attachment points of the spoke pair 14 are "close" to one another. The spoke pairs 14 are angularly spaced from one another. At least two spokes of the second set of spokes 15 are grouped into pairs (namely adjacent spokes 15 can be considered to be a spoke pair). The attachment points of the second spoke pair 15 are "close" to one another. The

attachment points of the spoke pair 14 define a distance that is smaller than the maximum diameter of the hub 10. The number of the first spoke set 14 is greater than that of the second spoke set 15; there being twice the number of first spokes 14 than second spokes 15 (see column 3, lines 3-5). The spokes 15 of the second set are single spokes. These spokes 15 are angularly interposed with the spokes of the first set 14. The tension of the first spoke set 14 is substantially balanced with the tension of the second spoke set 15 in the axial direction of the wheel. The first spoke set 14 is inclined at an angle 18 with respect to a median plane 16 of the wheel, and is smaller than the inclination angle 17 of the second spoke set 15. The spoke pairs of the first set 14 are arranged equal distances apart; while the single spokes 15 of the second set are also evenly spaced apart, and is equidistant between two adjacent spoke pairs 14 of the first set. The wheel could function as a rear wheel. The first 14 and second 15 sets of spokes produce generally equal forces in opposite directions along the axis of the wheel in order to maintain the rim 11 to be centered about a median plane of the wheel (which would be defined through the axial center point of the rim 11). The spokes (1 3-1 4) connecting the first portion of the hub 10 to the rim 11 alternate between single spokes 13 and spoke pairs 14. Each set of first spokes (1 3-14) includes a spoke 13 that when viewed in the direction of the wheel's axis is set at the

center between two adjacent sets of spokes 14, in a radial plane of symmetry.

The present invention is a spoked bicycle wheel comprising a rim, a hub having an axis (X) and a median plane (M) perpendicular to the axis (X) and first array of anchoring portions and second array of anchoring portions for anchoring spokes, and a plurality of spokes connecting the hub to the rim, by a first set of spokes connected to the first array of anchoring portions and a second set of spokes connected to the second array of anchoring portions, wherein all spokes of any of the sets of spokes are on a same side of the median plane while the first set and the second set are on opposite sides of the median plane, and wherein at least two spokes of the first set are grouped together to form a pair in which no spoke of the second set of spokes is interposed.

Furthermore, the present invention is a bicycle wheel comprising a hub having an axis (X) and a median plane (M) generally perpendicular to the axis (X); a rim; and a plurality of spokes, arranged in sets of spokes, connecting the hub to the rim, wherein a first set of spokes connect a first portion of the hub to the rim on a first side of the median plane and a second set of spokes connect a second portion of the hub to the rim on a second side of the median plane and the spokes on each side

of the median plane produce generally equal forces in opposite directions along the axis (X) that maintain the rim centered about the median plane.

Regarding claims 1 and 39, House Jr. discloses a "triple spoked" wheel having two sets of tensioning spokes and one set of braking spokes. All three sets of spokes are anchored to the rim on the same side of the median plane of the hub, so that spokes 13 and 14 are on a first side of the median plane, while spokes 15 cross such median plane. House Jr. also does not show the specific arrangement of spokes as is now claimed and that least two spokes of the first set of spokes are grouped together so as to form a pair in which no spoke of the second set of spokes is interposed. There is no teaching in House Jr. how the spokes are arranged, no angle measurements or spoke lengths from which one can determine the arrangement of the spokes in the wheel.

Claims 2, 8-10, 16-20, 22-23, 25, 28-30, 40 - 50 and 53 are dependent upon claims 1 and 39, which the Applicant believes is allowable over the cited prior art of record for the same reasons provided above.

Based on the arguments presented above, withdrawal of the § 102 rejection of claims 1-2, 8-10, 16-20, 22-23, 25, 28-30, 39-40, 42, and 53 is respectfully requested.

**Claim Rejections - 35 USC §103**

Claims 3-5, and 24 were rejected in the Action as obvious over House, Jr. The Action stated:

House, Jr. contains all of the limitations as set forth in paragraph 9 above, but does not specify the relation of the distance between the attachment points of the spoke pair to the pitch of a conventional wheel having the same number of spokes. It would have been obvious to one of ordinary skill in the art at the time of the invention to mount the paired spokes at rim attachment points having a distance that is less than or equal to 60, 40, or 25% of the pitch of a conventional wheel having the same total number of spokes; as a mechanical expedient in order to properly balance the wheel. While not stated, the sum of the tensile forces of the first spoke set 14 with respect to the sum of the tensile forces of the second spoke set 15 could be in a ratio equal to the inverse ratio ( $\sin \text{angle } 17 / \sin \text{angle } 18$ ) in order to balance the forces exerted on the wheel, thus preventing the wheel from failing during operation.

Further to the above comments, Applicant respectfully traverses the rejection. The Action states that it would be obvious to mount the paired spokes at rim attachment points having a distance that is less than or equal to 60, 40, or 25% of the pitch of a conventional wheel having the same total number of spokes. This statement is unsupported by the references and problematic in that it applies hindsight. First, House Jr. is completely silent with respect to mounting paired spokes at rim attachment points having a distance that is less than or equal to 60,

40, or 25% of the pitch of a conventional wheel having the same total number of spokes. Second, it is well settled that the fact that the prior art must be modified to produce the claimed invention does not make the claimed invention obvious unless there is something in the prior art to suggest the desirability of making such a modification. *In re Laskowski* 10 USPQ2d 1397, 1398 (Fed.Cir. 1980). A rejection based on Section 103 must rest on a factual basis, with the facts being interpreted without hindsight reconstruction of the invention from the prior art.

In making this evaluation, the Examiner has the initial duty of supplying in the Action the factual basis for the rejection advanced. The Examiner may not, because of a doubt that the invention is patentable, resort to speculation, unfounded assumptions, or hindsight reconstruction to supply deficiencies in the factual basis. *Ex parte Havmond*, 41 USPQ2d 1217 (BdPatApp&Int 1996). That is, there must be some logical reason apparent from positive, concrete evidence of record which justifies a suggestion to modify a prior art structure. See *In re Regel*, 188 USPQ 136, 139 (CCPA 1975).

Claims 6, 21, 34, 36, 41, 43, and 51 were rejected in the Action over House, Jr. as applied to claims 1-5, 8-10, 16-20, 22-25, 28-30, 39-40, and 53 above, and further in view of Krampera ('853 A1). The Action states:

House, Jr. does not show the attachment points of the spoke pair having a distance that approaches zero. In Figure 6, Krampera



teaches the use of a wheel having spoke pairs (the solid spokes) with rim attachment points having a distance that is approaching zero. Therefore from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the spoke pairs of House, Jr. in the manner taught by Krampera as a mechanical expedient, dependent upon the type of forces the spokes are meant to absorb. In figure 5, Krampera teaches the use of spokes of the second set (the phantom spokes), which all extend radially from the axis, of the wheel, and which have an identical angular position with the first spokes (the solid spokes). Therefore from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to form, the second spoke set of House, Jr. in the manner taught by Krampera as a mechanical expedient, dependent upon the type of forces the spokes are meant to absorb. Krampera further teaches in Figure 6, the use of a wheel having the spoke pairs of a first set (the solid spokes) being between four and fourteen (in this case eight). The single spokes (the phantom spokes) number between four and fourteen (in this case eight). Furthermore, the spokes of each group are "specular" with respect to a radial plane of symmetry when viewed in the direction of the wheel's axis. Therefore from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to arrange the spoke pairs and single spokes of House, Jr. in the manner taught by Krampera in order to provide a force-balanced wheel.

Further to the above arguments regarding House Jr., Applicant respectfully traverses the rejection. House Jr. teaches a "triple spoked" automobile wheel, Krampera teaches a rim for a rear bicycle wheel. Assuming *arguendo* that these references could somehow be combined, they would not show or suggest the claimed invention.

Neither House Jr. nor Krampera shows nor suggests a spoked wheel for a bicycle comprising a rim, a hub defining an axis and a median plane, the hub having a first anchoring portion on a first side of the median plane and a second anchoring portion on a second side of the median plane for anchoring spokes, and a plurality of spokes, that connect the hub to the rim, in which a first set of spokes is connected to the first anchoring portion of the hub and a second set of spokes is connected to the second anchoring portion of the hub, wherein at least two spokes of the first set of spokes are grouped together so as to form a pair in which no spoke of the second set of spokes is interposed. Nor does either of them show or suggest a bicycle wheel comprising a hub having an axis and a median plane generally perpendicular to the axis; a rim; and a plurality of spokes, arranged in sets of spokes, connecting the hub to the rim, wherein a first set of spokes connect a first portion of the hub to the rim on a first side of the median plane and a second set of spokes connect a second portion of the hub to the rim on a second side of the median plane and the spokes on each side of the median plane produce generally equal

forces in opposite directions along the axis that maintain the rim centered about the median plane, as is claimed.

Under 35 U.S.C. § 103, the claimed invention must be considered as a whole and the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the claimed invention. No motivation is found in the references themselves for the proposed combination, as is required under Section 103. One of ordinary skill in the art would not have the motivation to combine the "triple spoked" automobile wheel of House Jr. with the bicycle rim of Krampera. No such evidence to combine the references was provided by the Action, which merely combined the two references after reviewing the claimed subject matter.

Claims 31, 49-50 were rejected in the Action as obvious over House, Jr. as applied to claims 1-5, 8-10, 16-20, 22-25, 28-30, 39-40, and 53 above, and further in view of Levedahl and in further view of Krampera ('853 A1). The Action states:

House, Jr. does not show the wheel having a sprocket cassette mounted thereon. Levedahl teaches the use of a spoke wheel having a sprocket cassette D mounted thereon. Therefore from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the wheel of House, Jr. with a sprocket cassette in order to allow the wheel to be a

drive wheel. Figure 3 of Krampera teaches the use of a wheel having a sprocket cassette mounted on the side of the hub having twice as many spokes as the opposite side of the hub. Therefore from this teaching, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the sprocket cassette taught by Levedahl on the side of the hub of House, Jr. having twice the number of spokes in order to balance the wheel, since the hub portion having double the number spokes would be able to support a higher tensile load than the hub portion having less spokes.

Further to the above comments, Applicant respectfully traverses the rejection. The Action states that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the wheel of House, Jr. with a sprocket cassette in order to allow the wheel to be a drive wheel. For the reasons stated above on pages 18 and 21, a rejection based on Section 103 must rest on a factual basis, with the facts being interpreted without hindsight reconstruction of the invention from the prior art. House Jr. teaches a "triple spoked" automobile wheel and is completely silent with respect to a hub which carries a sprocket cassette. One of ordinary skill in the art would not have the motivation to combine the "triple spoked" automobile wheel of House Jr. with the bicycle rim of Krampera and with the sprocket cassette of Levedahl.

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The Action has not established a *prima facie* case of obviousness. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 103 is respectfully requested.

**Conclusion**

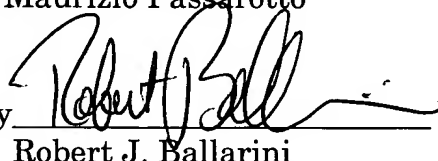
If the Examiner believes that an interview, telephonically or in person, will materially advance the prosecution of this application, the Examiner is invited to contact the undersigned at the Examiner's convenience to arrange an interview.

In view of the foregoing amendment and remarks, Applicants respectfully submit that the present application, including claims 1 - 50 and 53, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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